# STEP-BY-STEP
## 2nd Ed.

## A GUIDE TO
## MOBILITY TECHNIQUES

## STUDY GUIDE

## NON-CANE TECHNIQUES

**By Sandra Rosen, Ph.D.**

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# INTRODUCTION

This module contains five non-cane techniques. These techniques have many purposes and are often used in familiar, indoor places when traveling without a cane. Historically called "pre-cane" skills, these techniques are now referred to by a variety of names including "directional techniques" and "self-protective techniques," depending upon the function of the specific technique. The early designation of "pre-cane" skills may have originated from the assumption that, because these techniques were often simpler to learn than basic cane techniques, O&M specialists would naturally teach them before teaching cane skills. In reality, these techniques are an integral part of travel both with and without a cane. They are not necessarily prerequisite to learning cane skills, but specific elements of them are often used in conjunction with guiding, long cane, and other techniques, depending upon a specific traveler's interests, abilities, and travel needs.

## Self-Protective Techniques

Self-protective techniques are used to detect objects in the travel path that are located at waist, chest, or head level. Such objects found outdoors include low tree branches, signs, or guy wires. Indoor objects at waist, chest or head height (e.g., tables, water fountains, light fixtures, or chandeliers) can be free-standing, mounted on recessed stands, suspended from the ceiling, or extending out from the wall.

Because self-protective techniques do not detect hazards or obstacles at foot level, such as a descending stairway or children's toys left on the floor, these techniques are generally used for travel in an environment that is familiar and controlled. They can, however, be used in conjunction with the long cane in unfamiliar or uncontrolled environments to detect objects above waist height that are too high for the cane tip to contact.

## Directional Techniques

Directional techniques consist of both trailing and direction-taking. Trailing is a technique used to follow a surface (e.g., a wall) and to find an objective along that surface (e.g., a specific doorway). It is also used to establish and maintain a line of direction for travelers who have difficulty doing so when not in direct contact with a vertical surface. Directional (a.k.a., direction-taking) techniques help establish a line of travel through open space to arrive at a specific destination most efficiently. These techniques involve aligning oneself to a wall, a piece of furniture, or other environmental feature before walking through open space to one's destination. More advanced uses involve using auditory and tactile information (e.g., traffic sounds, grass border alongside a path) detected during the course of travel to monitor and correct one's direction along the way. Direction-taking techniques involve one of two types of alignment: perpendicular alignment or parallel alignment.

- Perpendicular alignment prepares the traveler to initiate movement through open space. By establishing a line of direction perpendicular to a specific object in the environment, the traveler projects a straight line of travel through open space to arrive at her desired destination. Initially, this may involve simply establishing a perpendicular alignment of one's body to a wall in order to cross a short hallway or walk across a room to arrive at the other side. In later travel, perpendicular alignment establishes a straight and accurate line of direction through larger open areas and even across a street. In this latter case, the traveler may align her body in a perpendicular direction to a straight curb edge, or she may even listen for traffic to identify the general direction of traffic flow in front of her and then align her body perpendicularly to the direction of flow. She then projects and follows a straight line of travel across the street.
- Parallel alignment enables the traveler to establish an initial line of travel and also facilitates self-correction of one's line of direction once travel has begun. For example, the traveler can use parallel alignment to follow a wall to arrive at a specific destination, or she can maintain a consistent direction of travel parallel to a grass border along a sidewalk to minimize veering off course. Similarly, the traveler preparing to cross the street may use the sounds of traffic on the street beside her to establish a straight and accurate line of travel across the street.

# SELF-PROTECTIVE

# LOWER HAND & FOREARM

## Purpose

Use this technique to locate objects at waist level and to provide limited lower trunk protection from undesired contact with objects when the traveler is not using a cane. This technique is a natural way to locate chairs, doorknobs, and other objects at or just below waist level. It is used only in selective situations and not for long distances. Because this technique is not used in conjunction with a long cane, it is generally only used in familiar, controlled environments.

## Prerequisite Techniques

None

## Teaching Environments

Begin in a quiet, familiar, and controlled indoor environment in which the traveler will contact objects at or just below waist height (e.g., chair, table, desk, trash can, water fountain, wall). Initially, the traveler should only need to walk short distances (i.e., 6–12 feet) before locating target objects.

Progress to a quiet, familiar, and controlled indoor environment that provides longer distances to traverse before contacting target objects.

Practice this technique in a variety of environments that may typically require the use of this skill (e.g., crossing rooms and hallways within one's home, moving through classrooms or offices, crossing hallways in school or office buildings).

## Skill

Unlike most mobility techniques, the LOWER HAND & FOREARM technique is not taught or performed as a series of sequential steps. Rather, it is taught as a grouping of components that are performed simultaneously.

1. The traveler positions her body as follows while walking (see Figures 1.01a and 1.01b):
   - **Trunk**
     - Facing straight forward
       - Keeping her trunk facing forward (without rotation) helps the traveler maintain a straight line of travel.
   - **Elbow**
     - Straight—neither hyperextended nor locked
       - The traveler's arm should be as relaxed as possible so that it "gives" when it contacts objects.

- **Hand & Wrist**
  - At midline, 6–8 inches in front of the body (for many adults, this is about a hand-span distance)
    - Holding her hand 6–8 inches in front of her body allows sufficient time to react when the traveler contacts objects; holding her hand farther forward may increase her reaction time, but it will decrease downward coverage.
  - The wrist bent slightly downward, and the palm facing the body
  - The fingers pointed downward and held relaxed and close together
    - Pointing her fingers downward extends the coverage slightly lower and protects her fingertips from injury when she contacts objects.

**Figure 1.01a**
The Lower Hand & Forearm position, front view

**Figure 1.01b**
The Lower Hand & Forearm position, side view

# General Modifications

The following modifications can be used in specific situations:

- If objects are likely to be encountered on the traveler's side, she can place her arm diagonally across her body with her hand in front of her opposite thigh and her fingers pointing toward the side (see Figure 1.02). This position gives increased side protection, but it provides less forward protection and can pull some travelers out of alignment.
- Holding a book, rolled newspaper, or other object in her hand will increase lower coverage and, thereby, increase detection; however, objects should not be carried for this purpose alone. If significantly lower detection is needed, the traveler should use a cane.

**Figure 1.02**
The traveler places her arm diagonally across her body width in order to detect objects that are likely to be encountered not at midline, but more to the side.

## Common Errors and Corrections

### Error:
The traveler holds her wrist straight with her fingers pointing slightly forward.

### Correction:
Holding her wrist bent downward with her fingers relaxed provides the traveler with slightly lower coverage and protects her fingertips from injury when contacting objects.

### Error:
The traveler fails to hold her hand at midline.

### Correction:
Holding her hand at midline provides maximum body protection when the traveler contacts objects and also helps to maintain a straight line of travel.

## Error:
The traveler holds her hand at midline, 3–4 inches in front of her body.

## Correction:
The traveler should hold her hand 6–8 inches in front of her body. This ensures that she will have sufficient time to react when she encounters objects.

## Error:
The traveler holds her arm forward with her hand at waist height.

## Correction:
The traveler should hold her arm with her hand 6–8 inches from her body. This positions her hand optimally to contact low objects while providing her with sufficient time to react when she contacts objects.

# Notes for Teachers

The components of the LOWER HAND & FOREARM technique are evaluated most easily from the following views:

- **Front view**
  - Arm position (straight vs. bent)
  - Midline position of hand
  - Wrist, hand, and finger position
- **Side view**
  - Position of hand 6–8 inches in front of body
  - Wrist and finger position

Some tall travelers may find that their hand passes over some low objects even though their arm is in the proper location. For these travelers, using a cane is generally the best way to detect low objects; or they may choose to carry a book, rolled newspaper, or other object in their hand to increase lower coverage, as described under General Modifications. Similarly, different body builds may require slightly different arm positioning. For example, some people of a heavier build may find it more comfortable to bend their elbow in order to place their hand in midline rather than hold their straight arm across their body.

The traveler should learn to perform this technique with each arm. In this way she can vary which arm to use as a matter of personal choice or in response to any specific environmental or situational factors that may be present (e.g., needing to carry items with her other arm).

This technique can provide lower trunk coverage when used in conjunction with the UPPER HAND & FOREARM, TRAILING, and TRAVERSING OPEN SPACES techniques.

This technique offers a good opportunity to practice environmental awareness and orientation skills.

## Related Techniques

Automobile Travel
Direction-Taking[1]
Seating[2]
Traversing Open Spaces[1]

[1] Knowing the LOWER HAND & FOREARM technique enables the traveler who is not using a cane to safely cross a familiar open area (in which there are no elevation changes) after establishing her direction of travel.
[2] Knowing the LOWER HAND & FOREARM technique may enable the traveler to walk forward and locate a chair in front of her when not using a cane.

# UPPER HAND & FOREARM

## Purpose

Use this technique to locate and to protect one's upper body from undesired contact with objects at chest height, such as the side of a door frame when walking through a doorway. This technique is often used in conjunction with other mobility techniques, such as TRAVERSING OPEN SPACES, NEGOTIATING DOORS—With a Guide, and negotiating a VEHICLE IN THE TRAVEL PATH. It is also used in a variety of travel situations, such as walking through areas where there is construction or through areas where there may be overhanging tree limbs and/or protruding bushes. It is used only in selective situations and not for long distances. It also may be used in the process of self-familiarization to a room to protect oneself when contacting chest-high objects in an unfamiliar environment.

## Prerequisite Techniques

None

## Teaching Environments

Begin in a quiet, unfamiliar indoor environment where the traveler will contact natural objects at chest and/or head height (e.g., protruding display cases, open doors, poles, lamps, walls, fire extinguishers, hanging plants).

- To minimize traveler anxiety about contacting objects, initially demonstrate the effectiveness of the technique by having the traveler contact a soft object (e.g., pillow) with her arm in the UPPER HAND & FOREARM position.

Progress next to an outdoor area where the traveler will contact objects at chest height and/or head height (e.g., signs protruding into a travel path from a side wall, low tree branches).

Lead up to areas in which there is heavier pedestrian congestion and where the traveler is likely to contact objects at chest and/or head height.

Practice this technique in a variety of situations requiring use of this skill. Such situations might include (a) traversing an open space, (b) trailing a wall from which chest height objects protrude, (c) performing the SEATING technique, (d) crossing open doorways, (e) negotiating a truck or tall vehicle parked in the travel path, and (f) recovering from a veer by crossing over a parkway.

# Skills

Unlike most mobility techniques, the UPPER HAND & FOREARM technique is not taught or performed as a series of sequential steps. Rather, it is taught as a grouping of components that are performed simultaneously.

## Standard

This technique is an effective method for detecting chest-high objects in the environment.

1. The traveler positions her body as follows while walking (see Figures 2.01a, 2.01b, and 2.01c):
   - **Trunk**
     - Facing straight forward
       - This helps the traveler to maintain her arm in the proper position for optimum body protection and assists her in maintaining a straight line of travel.
   - **Upper arm**
     - Pointing straight forward, parallel to the floor at shoulder height (with shoulders relaxed)
       - Reaching the upper arm straight forward provides maximum reaction time when objects are contacted.
       - Keeping the upper arm parallel to the floor provides coverage of the shoulder on that side.
   - **Elbow**
     - Bent to 120 degrees
       - This position enables the forearm to reach across the body, covering the full body width, and positions the hand slightly forward of the elbow. This gives more forward coverage, increasing available reaction time and the likelihood that the hand, rather than the sensitive bones of the elbow, will contact objects first.
       - To verify that she is holding her arm in the correct position or to help her to assume the correct position by providing additional tactile and proprioceptive input, the traveler can place the back of her hand against the front of her shoulder, then straighten her elbow to 120 degrees. Some travelers find it easiest to identify the 120-degree position by first straightening their arm to 90 degrees and then extending it another 30 degrees, or "one-third of the remaining distance to straight."
   - **Forearm**
     - Across her body with her fingers reaching 1 inch beyond her opposite shoulder
       - This position protects the traveler's full body width.
       - The traveler's arm should be as relaxed as possible so that it "gives" when it contacts objects.

- **Wrist**
  - Straight
    - Keeping the wrist straight positions the fingers and palm to contact objects first. This increases forward protection and also protects the wrist (which can be sensitive) from contact with objects.
- **Hand**
  - Palm facing forward and cupped slightly; the fingers held together and relaxed
    - This position allows the traveler to contact objects with the softer, more padded surface of the palm. The relaxed finger position prevents injury when objects are contacted.

**Figure 2.01a**
The Upper Hand & Forearm position, front view

**Figure 2.01b**
The Upper Hand & Forearm position, side view

**Figure 2.01c**
The Upper Hand & Forearm position, rear view

2. The traveler walks forward, generally at a slower pace, until contacting the object in her path.
    - When walking along a wall, the traveler performs the UPPER HAND & FOREARM technique with the arm opposite the wall. This positions her to contact objects along the wall with her fingertips rather than with the sensitive bones of her elbow (see Figure 2.02).

**Figure 2.02**
When following a wall, the traveler performs the UPPER HAND & FOREARM technique with the arm opposite the wall.

## Modified

This method is used to protect the face from contact with objects in the environment (e.g., side mirrors on trucks, protruding beams at construction sites, low hanging branches). It is also used to protect the face from contact with objects when doing such things as bending over to clear a seat, drink from a fountain, or performing a tactile search for dropped objects.

3. The traveler positions her body as follows while walking (see Figures 2.03a and 2.03b):
   - **Trunk**
     - Facing straight forward
   - **Elbow**
     - Slightly ahead of her body
   - **Wrist**
     - Straight
   - **Hand**
     - 12 inches in front of her face, fingers reaching slightly above the top of her head.
     - Palm facing forward and cupped slightly.
     - Fingers pointed upward; held relaxed and close together.

**Figure 2.03a**
The Upper Hand & Forearm (Modified) position, front view

**Figure 2.03b**
The Upper Hand & Forearm (Modified) position, side view

# Common Errors and Corrections

## Error:
The traveler allows her arm to slip below shoulder height.

## Correction:
Maintaining her arm at shoulder height provides the traveler with optimum trunk protection and reaction time when she contacts objects.

## Error:
The traveler holds her hand with her palm facing either down or toward her body.

## Correction:
Holding her hand with her palm facing forward enables the traveler to contact objects with her cushioned palm rather than with the sensitive bones in the back of her hand.

## Error:
The traveler holds her elbow with less than a 120-degree angle.

## Correction:
Holding her elbow at a 120-degree angle provides the traveler with optimum trunk protection and reaction time when she contacts objects. It also protects the sensitive bones at the elbow from contact with objects.

## Error:
The traveler holds her wrist bent backward slightly.

## Correction:
Holding her wrist straight places the palm of the traveler's hand in the proper position to contact objects and to avoid contacting them with the sensitive bones and nerves in her wrist.

## Error:
The traveler does not reach her arm fully across her body.

## Correction:
Reaching her arm fully across her body so that her fingers extend 1–2 inches beyond her shoulder width ensures that the traveler's hand will be positioned to protect her opposite shoulder.

## Error:
The traveler holds her elbow with more than a 120-degree angle.

## Correction:
Holding her elbow bent to a 120-degree angle places the traveler's hand and forearm in a position to protect the full width of her trunk while providing adequate time for her to react when she contacts objects.

## Error:
The traveler points her fingers straight forward.

## Correction:
Cupping her palm slightly without pointing her fingers forward positions the traveler's palm properly to contact objects while preventing her from jamming her fingertips when she contacts objects.

## Error:
The traveler performs the UPPER HAND & FOREARM technique with the arm closest to the wall next to which she is walking.

## Correction:
Performing the UPPER HAND & FOREARM technique with the arm that is farthest from the wall places the traveler's palm in the proximity of objects likely to be encountered along the wall.

## Error:
The traveler walks with the shoulder of the arm that she is using to perform the UPPER HAND & FOREARM technique elevated.

## Correction:
Maintaining her shoulders level helps the traveler to avoid inadvertently rotating her trunk and potentially veering. It also makes the technique more comfortable to perform.

## Error:
The traveler reaches the shoulder of the arm that she is using to perform the UPPER HAND & FOREARM technique forward.

## Correction:
Not reaching her shoulder forward helps the traveler avoid rotating her trunk and inadvertently veering.

## Error:
The traveler reaches her arm too far across her body.

## Correction:
Reaching her arm across her body only far enough to extend her fingers 1–2 inches beyond her shoulder width will help prevent the traveler from rotating her trunk and inadvertently veering. It will also ensure better shoulder protection on the side of the arm that is in the UPPER HAND & FOREARM position.

# Notes for Teachers

This technique is also called the "cross body technique," "forearm technique," "upper arm technique," or "upper protective arm technique."

It is easiest to evaluate the components of the UPPER HAND & FOREARM technique from the following views:

- **Front view**
  - Upper arm position
  - Forearm position (coverage of body width)
  - Wrist, hand, and finger position
- **Rear view**
  - Forearm position (fingertips extended 1 inch beyond body width)
- **Side view**
  - Elbow position
  - Wrist position

This technique is used selectively because it can be tiring to perform; it is not used for long distances. Common uses include positioning the hand to protect one's shoulder from contacting the door jamb when going through an open doorway. Because the traveler must know the general location of chest- and head-high objects in the travel path in order to know when to perform the technique, generally it is used in familiar environments with a few exceptions.

- When a traveler veers while crossing a street and encounters a parkway above the curb instead of the sidewalk, she may choose to step up immediately to get away from traffic or to remain in the street and follow the curb using the THREE-POINT technique until she locates the sidewalk. If she chooses to step up onto the parkway, she should use the UPPER HAND & FOREARM (Modified) technique to protect her face from contact with low hanging tree branches, guy wires, etc. that may be present.
- When a traveler encounters a median strip when crossing a street in an unfamiliar area, she should use the UPPER HAND & FOREARM (Modified) technique as she steps up onto the median strip in order to protect her face from contact with any low signs or traffic lights that may be extending out from a pole (see Figure 2.04).
- When a traveler is familiarizing herself with a room, using this technique helps her protect her upper body from collisions with head- or chest-high objects that the cane might miss.

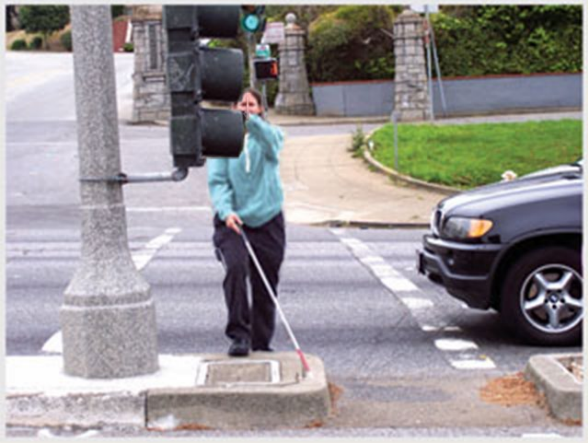

**Figure 2.04**
The traveler uses the UPPER HAND & FOREARM (Modified) technique to protect her face from unwanted contact with objects located on median strips.

The following is a possible teaching sequence:

1. Have the traveler position her arm, relax it, then reposition it. Repeat this procedure several times.
    - Initially teach this technique while the traveler is standing with her back against a wall for support so that she can concentrate on learning the arm position, rather than worrying about keeping her balance. This can be especially helpful for travelers who are anxious or who have balance problems.

2. Ask the traveler to "square off" against one wall and walk a short distance (e.g., the width of a hallway) to contact an object or the opposite wall.
3. Ask the traveler to walk progressively longer distances while still maintaining the proper arm position.
    - If the traveler loses her arm position when anticipating walls or objects, practice the skill in an unfamiliar area.
    - Some travelers have a tendency to tense up when approaching an object. Remind them to keep the hand, arm, and shoulders relaxed to best absorb any impact when contacting an object.
    - The traveler should learn to perform this technique with each arm. In this way she can vary which arm she uses either as a matter of personal choice or in response to any specific environmental factors that may be present (e.g., objects protruding along a wall on one side).
    - This technique may be used in combination with other non-cane techniques, such as the LOWER HAND & FOREARM and TRAILING techniques, and certain cane skills (e.g., VEHICLE IN THE TRAVEL PATH) to provide maximum protection in certain situations.

# Related Techniques

Automobile Travel
City Bus Travel
Contacting & Exploring Objects
Direction-Taking[1]
Locating Dropped Objects
Negotiating Doors—With a Guide (When the Traveler Is Not Carrying a Cane)
Obstacles in the Travel Path[1]
Recovery from a Veer
Revolving Doors
Seating
Subway Travel
Traversing Open Spaces[2]
Vehicle in the Travel Path

[1] Knowing the UPPER HAND & FOREARM technique can protect the traveler from unwanted upper body contact with anticipated objects contacted in the travel path (e.g., protruding or low-hanging signs).
[2] Knowing the UPPER HAND & FOREARM technique enables the traveler to safely cross an open area in which there may be obstacles at head or chest height (e.g., crossing over a grassy area where there may be low-hanging tree branches, or across a hallway where there may be tall furniture with a raised base under which the cane may slide).

# DIRECTIONAL

# TRAILING

## Purpose

This technique is used to locate landmarks and objects along a wall or other vertical surface being followed. This technique also provides increased physical contact with the environment and can enable the traveler to maintain a straight line of travel in the event that veering or maintaining orientation in space are a concern.

## Prerequisite Techniques

None

## Teaching Environments

Begin in a quiet, controlled, and familiar indoor area that is free of obstacles and in which there is a smooth vertical surface (e.g., tile, plaster, drywall) to follow.

Progress to quiet, unfamiliar indoor and outdoor environments that have objects that will be contacted along the vertical surface being followed (e.g., protruding display cases, doorways, open doors, doorknobs, intersecting walls or hallway openings, fire extinguishers).

Gradually introduce trailing surfaces with varying textures (e.g., brick, metal, wood).

Lead up to a congested area where the traveler would naturally trail (e.g., a tray rail or counter in a cafeteria line, a handrail along hallway walls of hospitals and some senior citizen centers, check-out counters in libraries and stores).

## Skill

1. The traveler holds his arm forward at a 45-degree angle (or about doorknob level). His elbow is straight but not locked (see Figure 3.01).
    - This position generally allows sufficient reaction time when encountering objects along the surface.
    - Tall travelers may decrease the amount of forward extension of their arm in order to trail at doorknob height. This, however, may decrease reaction time when they contact objects.
    - Short travelers may increase the amount of forward extension of their arm to raise their hand to doorknob level; raising the arm too high, however, can cause it to be jarred when contacting objects.

**Figure 3.01**
The traveler holds his arm forward at a 45-degree angle. His elbow is straight but not locked.

2. The traveler walks 4–6 inches (one hand-span) from the trailing surface, contacting it lightly with his hand (see "Hand Positions," below).
    - Maintaining a 4–6-inch distance from the trailing surface helps the traveler to maintain a consistent relationship to the surface, neither contacting it with his shoulder or hips nor veering away from it.
    - Touching the surface lightly:
        - Is more comfortable and reduces the possibility of injuring the traveler's hand or fingers when contacting objects,
        - Facilitates passage over slight protrusions and crevices,
        - Prevents the fingers from disturbing objects on the trailing surface, and
        - Allows the traveler to maintain a natural pace.

## Hand Positions

All positions facilitate ease of trailing while protecting the thumb and fingertips from being jammed on objects, catching on rough edges along the trailing surface, or getting slivers under the fingernails.

### Trailing with the Ring Finger and Little Finger

An effective means of trailing a surface with minimal hand contact

1. The traveler trails with the back of his ring and little fingers lightly touching the surface. His hand is relaxed with his fingers cupped slightly and pointing downward; his thumb is tucked next to his fingers (see Figure 3.02).

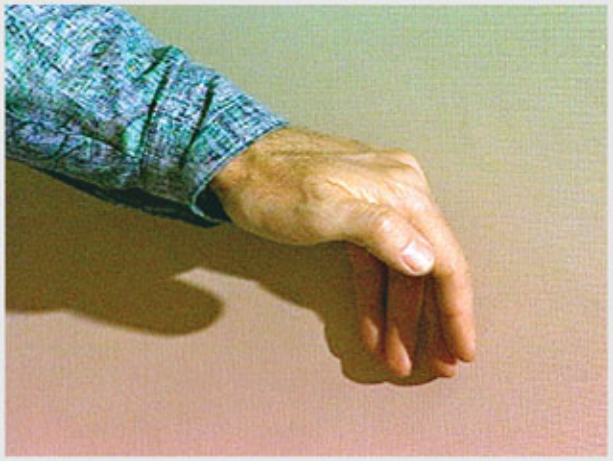

**Figure 3.02**
Trailing with the ring and little fingers

## Trailing With All Four Fingers

An effective means of trailing that provides for the greatest amount of hand contact with the surface

1. The traveler trails with the back of his fingers touching the surface lightly. His hand is relaxed with his fingers cupped slightly and pointing downward; his thumb is tucked next to his fingers, pointing downward (see Figure 3.03).

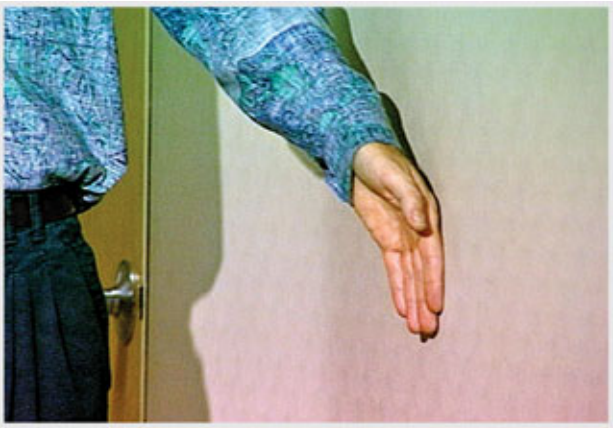

**Figure 3.03**
Trailing with all four fingers

## Trailing With the Side of the Hand

This is an effective means of trailing a surface that some travelers find very comfortable. It is sometimes preferred by travelers who wear large rings.

1. The traveler trails with the side of his hand touching the surface. He holds his wrist bent so that the back of his hand faces forward. His hand is relaxed with his fingers

cupped slightly and pointing downward; his thumb is tucked next to his fingers and also points downward (see Figure 3.04)

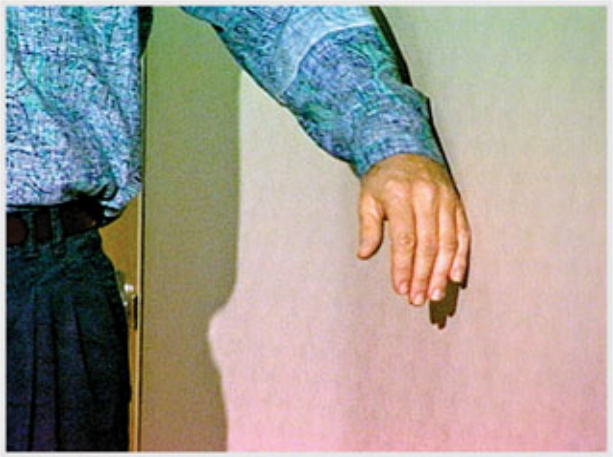

**Figure 3.04**
Trailing with the side of hand

## Trailing With the Fingernails

Although not as commonly used as other trailing skills, this is often the most comfortable method of trailing surfaces that are rough.

1. The traveler trails with the backs of his fingernails touching the surface. His fingers are curled into a loose fist with his fingers pointing backwards and his thumb pointing downward (see Figure 3.05).

**Figure 3.05**
Trailing with the fingernails

# Common Errors and Corrections

## Error:

The traveler points the fingers of his trailing hand forward.

## Correction:

Pointing the fingers of his trailing hand downward prevents the traveler from jamming his fingers against objects that he encounters along the trailed surface or getting splinters under his fingernails.

## Error:

The traveler fails to reach his trailing arm forward at a 45-degree angle.

## Correction:

Reaching his arm forward at a 45-degree angle (approximately doorknob level) provides the traveler with sufficient time to react when he encounters objects along the trailed surface.

## Error:

The traveler holds his trailing arm rigid with his elbow locked.

## Correction:

Holding his trailing arm relaxed enough to have a light contact with the trailed surface helps him to avoid disturbing objects along the surface and prevents him from being jarred when he does contact an object.

## Error:

The traveler presses his hand heavily against the wall or surface that he is trailing.

## Correction:

Maintaining light contact with the surface being trailed will prevent the traveler from disturbing objects along the surface and can minimize the potential for veering into any openings that the traveler encounters.

# Notes for Teachers

The components of the TRAILING technique can be evaluated most easily from the following views:

- **Front view**
  - Traveler's distance from the trailing surface
- **Side view**
  - Arm position
  - Hand position

The traveler should learn to perform this technique with each hand so that he will be able to follow a vertical surface on either side.

In addition to enabling the traveler to locate landmarks or objects along a vertical surface, such as a wall, trailing can also be used to follow desks and tabletops along their sides to avoid disturbing objects that may be on top of them.

Because trailing can be tiring and increases the potential for unnecessary contact with items along the trailed surface, this technique is generally used only selectively and only for limited distances.

Trailing is often used with the UPPER HAND & FOREARM or LOWER HAND & FOREARM technique or with a cane. These combinations enable a traveler to trail a vertical surface to locate a landmark (e.g., doorknob of a hallway door) while protecting himself from objects that the trailing hand might miss.

## Related Techniques

Direction-Taking[1]
Reversing Direction (When the Traveler Is Not Carrying a Cane)[2]
Reversing Direction (When the Traveler Is Carrying a Cane)[2]
Transferring Sides (When the Traveler Is Not Carrying a Cane)[2]
Transferring Sides (When the Traveler Is Carrying a Cane)[2]
Seating[3]

[1] The traveler may use the hand and arm position of the TRAILING technique to establish her starting position in the Parallel Alignment method of the DIRECTION-TAKING technique.
[2] Knowing the TRAILING technique may assist in learning how to locate the guide's other arm by trailing across his back when reversing direction or transferring sides, either with or without a cane.
[3] The traveler may use the TRAILING technique to trail the forward row while sidestepping into a row of theater seats. This allows her to count seats easily and to facilitate relocating her seat if she leaves alone during the show.

# DIRECTION-TAKING (TACTILE)

## Purpose

To use objects in the environment to establish a line of direction

## Prerequisite Techniques

Diagonal[1]
Lower Hand & Forearm[1]
Touch[1]
Trailing[2]
Upper Hand & Forearm[1]

## Teaching Environments

Begin in a quiet, familiar area that is free of obstacles and in which the traveler should have only short distances to walk (e.g., 6–12 feet) before reaching her objective.

Progress to a quiet, unfamiliar indoor environment that provides longer distances to walk.

Progress next to outdoor areas, and then, finally, to congested areas.

## Skills

### Perpendicular Alignment

This technique is used to establish a line of travel by first aligning to an object in the environment, the surface of which runs perpendicular to the desired line of travel. Perpendicular alignment is often referred to as "squaring-off."

1. The traveler stands with her back to a flat surface that runs perpendicular to her desired line of travel.
   - To help verify this alignment, the traveler can place two symmetrical body parts (e.g., heels, hips, shoulders) against the object's surface. She then aligns with her feet, hips, and shoulders facing forward (see Figure 4.01).
   - It is important to align only with objects that have a straight surface. Aligning with curved or movable objects (e.g., round tables, chairs that roll or swivel) can make it difficult to obtain the precise alignment needed to travel in the desired direction.

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[1] Knowing the LOWER HAND & FOREARM, UPPER HAND & FOREARM, DIAGONAL, and TOUCH techniques enables the traveler to move forward safely after establishing her proper direction of travel.
[2] The traveler may use the hand and arm position of the TRAILING technique to establish her starting position in the Parallel Alignment method of the DIRECTION-TAKING technique.

**Figure 4.01**
The traveler places two symmetrical body parts against an object's surface to verify that she is aligned perpendicularly to it.

2. The traveler mentally projects a line of travel forward and then walks ahead using protective and/or cane techniques.

## Parallel Alignment

This technique is used to establish a line of travel by aligning to an object in the environment, the surface of which runs parallel to the desired line of travel. In addition, parallel alignment is often used on a continuous basis to maintain on-course travel as one moves through an environment. For example, a traveler maintains a straight line of travel down a sidewalk by essentially maintaining a parallel alignment to the curb on one side.

1. The traveler stands next to a flat surface that runs parallel to her desired line of travel. Her entire body (head, trunk, and feet) face forward.
   - Some travelers find that standing about 4–6 inches from the surface is often a comfortable distance to allow easy arm movement without crowding and without having to reach excessively far to contact the surface.
   - To help verify her parallel starting position, the traveler can slide her arm forward along the surface in an arc from her side to the TRAILING position and then back (see Figure 4.02). She can repeat this movement as needed.
   - When using a cane, the traveler can verify alignment by sliding the cane tip back and forth along the parallel surface (see Figure 4.03)

   **Note:** It is important to align only with objects that have a straight surface. Aligning with curved or movable objects (e.g., round tables, chairs that roll or swivel) can make it difficult to obtain the precise alignment needed to travel in the desired direction.

**Figure 4.02**
The traveler slides her arm forward along the surface in an arc from her side to the TRAILING position and then back in order to verify that she is aligned parallel to it, as shown by the white double-headed arrow in the photo.

**Figure 4.03**
The traveler slides her cane tip forward and back along the parallel surface to verify that she is aligned parallel to it, as shown by the white double-headed arrow in the photo.

2. The traveler mentally projects a line of travel parallel to the surface and walks ahead using appropriate protective and/or cane techniques.
    - Once the line has been established, the traveler can move slightly away from the shoreline, maintaining her general direction of travel. In this case, she simply rotates her trunk away from the surface as she takes her first 1–2 steps, then realigns her trunk forward and continues walking.
    - If she desires, the traveler can also trail the object as she takes her first few steps forward. This may provide additional verification of her parallel alignment.

# General Modifications

To align in an open doorway, the traveler can lightly touch the frame of the doorway on each side with the back of her hands (see Figure 4.04).

**Figure 4.04**
The traveler aligns in a doorway by lightly touching the inside of the doorframe with the backs of her hands.

# Common Errors and Corrections

## Error:

The traveler aligns to a round surface.

## Correction:

Aligning only to a flat surface ensures that the traveler will have a perpendicular line of travel away from the surface. It is not possible to ensure travel in the desired direction if she aligns to a round surface.

## Error:

The traveler aligns both heels to a vertical surface but does not stand with her hips and shoulders also aligned forward before walking (perpendicular alignment).

## Correction:

Making sure that her entire body is aligned to the vertical surface before walking helps the traveler to ensure that she will have a perpendicular line of travel away from the surface.

## Error:

The traveler aligns the shoulder, hip, and heel on only one side of her body to a vertical surface before walking (perpendicular alignment).

## Correction:
Aligning two symmetrical body parts to the surface before walking helps to ensure that the traveler will have a perpendicular line of travel away from the surface.

## Error:
The traveler aligns her trunk, but not her feet, parallel to a vertical surface before walking (parallel alignment).

## Correction:
Making sure that both her trunk and her feet are aligned parallel to the vertical surface before walking ensures that the traveler will have an accurate line of travel parallel to it. In order to move slightly away from the surface while still maintaining a parallel direction of travel, the traveler can rotate her trunk away from the surface for the first few steps, then realign her trunk parallel to the surface and continue walking.

## Error:
The traveler walks at a slow pace when performing this technique.

## Correction:
Maintaining a consistent walking pace at normal or slightly faster than normal speed facilitates a straight line of travel.

## Error:
Following a veer into the shoreline on the side of the travel path, the traveler turns her entire body to face the desired line of travel to reestablish a correct line of travel.

## Correction:
Turning only her trunk in the desired direction of travel, without also turning her feet, generally reestablishes alignment without causing the over-correction that often occurs when turning one's entire body.

# Notes for Teachers
Initial success in achieving perpendicular alignment is most often attained when aligning to walls where the whole body can be placed against the surface.

Many travelers find it easier to learn perpendicular alignment than parallel alignment, perhaps because of the increased tactile input obtained from bilateral body contact with the vertical surface. It may therefore be helpful to teach perpendicular alignment prior to teaching parallel alignment.

It is often helpful to practice aligning with a variety of objects (e.g., walls, furniture) and aligning using different body parts. This can be extended to using auditory information.

To help project a straight line of travel, the traveler can

- Mentally project a line from midline to where he wants to go;
- Point to his destination or intended line of travel.

Adventitiously blind travelers may also benefit from using visual imagery to project a straight line.

Proper alignment procedures also facilitate orientation when establishing self-to-object and object-to-object relationships and using systematic search patterns (e.g., when familiarizing oneself with a room).

The DIRECTION-TAKING technique, combined with SEARCH PATTERNS, is also used in the process of familiarizing oneself to a space, such as a room or building.

A related skill, Auditory Direction-Taking, is used in street crossing procedures.

## Related Techniques

Areas Without Sidewalks
Gas Stations[1]
Sidewalk Recovery[2]
Traversing Open Spaces
Curb Contact: Determining Corner vs. Mid-Block

[1] When recovering from an inadvertent veer into a gas station, the traveler can use the DIRECTION-TAKING technique to establish a perpendicular alignment from objects that she may likely encounter (e.g., gas pump island, wall of a building). Doing so will generally position her to follow the shortest route back to the public sidewalk.
[2] When recovering from an inadvertent veer from the travel path, the traveler can use the DIRECTION-TAKING technique to establish a parallel alignment with the shoreline that she has contacted. Doing so will often position her to follow the shortest route back to the public sidewalk.

# TRAVERSING OPEN SPACES

## Purpose

This technique is used to pass an open doorway, an intersecting hallway, or another open area when trailing a wall or other vertical surface. Depending upon the environment, the traveler can use this technique either with or without a cane.

## Prerequisite Techniques

Diagonal[1]
Direction-Taking
Lower Hand & Forearm[1]
Touch[1]
Upper Hand & Forearm[1]

## Teaching Environments

Begin in a quiet, controlled, and familiar area that is free of obstacles and that has only short distances to traverse (i.e., approximately a double door's width).

Progress to a quiet, unfamiliar indoor environment with longer distances to traverse (e.g., large, intersecting hallways).

Progress next to outdoor areas and then to areas in which there is heavier pedestrian congestion.

## Skills

The traveler can identify the beginning and end of openings using tactile, auditory, and/or temperature clues. He then crosses the opening using one of the following skills.

### Upper Hand & Forearm

This skill is generally used when crossing a narrow opening (e.g., doorway) where there is little chance of veering off course. It may also be used by travelers who are able to cross wide openings without veering. While it is more conspicuous than the extended arm skill (described later in this section), it gives more body protection when contacting the wall or chest-high objects on the other side of the opening.

1. Upon locating the opening with his trailing hand, the traveler maintains contact with the wall and walks up to the opening.
2. The traveler pauses and listens to verify that no one is passing through the opening.

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[1] Knowing the UPPER HAND & FOREARM, LOWER HAND & FOREARM, DIAGONAL, and TOUCH techniques enables the traveler to travel safely across the open space.

3. Using the DIRECTION-TAKING (parallel alignment) technique, the traveler projects a straight line of travel across the opening.
    - Holding his head up, facing straight forward, and mentally projecting the continuation of the wall may help the traveler to walk a straighter line of travel across the opening.

4. When it is clear, the traveler drops his trailing arm to his side and assumes the UPPER HAND & FOREARM position with his other arm.
5. The traveler crosses the opening using the UPPER HAND & FOREARM technique (see Figure 5.01). He locates the continuation of the trailing surface (e.g., wall) on the opposite side of the opening and then resumes travel.
    - The UPPER HAND & FOREARM technique protects his body from contact with the wall on the opposite side of the opening.
    - The traveler may choose to use the LOWER HAND & FOREARM technique, as well, if there is any possibility of encountering objects at or slightly below waist level as he crosses the opening.
    - If the traveler walks a sufficient distance and does not locate the wall on the other side of the opening, he can relocate it using the Recovery from a Veer skill.

**Figure 5.01**
The traveler holds his arm in the UPPER HAND & FOREARM position as he crosses the intersecting hallway.

## Recovery from a Veer

If the traveler veers away from the wall and does not find it again easily after crossing the opening, he can relocate the wall using this skill.

1. Upon identifying a veer away from the opening (the traveler has walked a sufficient distance and has not yet located the wall on the other side of the opening), the traveler angles his body slightly toward the wall he wishes to contact and walks toward it using the UPPER HAND & FOREARM technique.
    - The UPPER HAND & FOREARM technique protects his body from contact with the wall on the opposite side of the opening.

- The traveler may additionally choose to use the LOWER HAND & FOREARM technique if there is any possibility of encountering objects at or slightly below waist level as he crosses the opening.

2. The traveler locates the wall and resumes travel.

## Extended Arm

This is an easy method for traversing open spaces that looks very natural. Because it provides no upper body protection, this skill is generally only used to cross narrow openings (e.g., doorways) where there is little chance of veering or of unwanted body contact with objects on the other side of the opening. It may also be used by travelers who are able to cross wide openings without veering.

1. Upon locating the opening with his trailing hand, the traveler maintains contact with the wall and walks up to the opening.
2. The traveler pauses and listens to verify that no one is passing through the opening.
3. Using the DIRECTION-TAKING (parallel alignment) technique, the traveler projects a straight line of travel across the opening.
   - Holding his head up, facing straight forward, and mentally projecting the continuation of the wall may help the traveler to walk a straighter line of travel across the opening.

4. When it is clear, the traveler reaches his trailing arm forward and resumes the TRAILING position (see Figure 5.02).
   - This procedure is relatively inconspicuous and easy to perform, but it can have some disadvantages, as described here:
     - There is a lack of body protection from hazards in the environment (e.g., partially open doors). For this reason, some travelers choose to also use the UPPER HAND & FOREARM technique for upper body protection.
     - There is a possibility of inadvertently poking people in the doorway with one's extended arm.

**Figure 5.02**
The traveler reaches his trailing arm forward in the extended arm position to locate the wall on the other side of the door.

5. The traveler crosses the opening, locates the wall on the opposite side, and then resumes travel (see Figure 5.03).
    - The traveler may choose to use the LOWER HAND & FOREARM technique while crossing if there is any possibility of encountering objects at or slightly below waist level as he crosses the opening.
    - If the traveler walks a sufficient distance and does not locate the wall on the other side of the opening, he can relocate it using the Recovery from a Veer skill.

**Figure 5.03**
The traveler locates the wall on the opposite side and then resumes travel.

## Rotating Trunk

This skill is used generally when crossing wider openings (e.g., intersecting hallways).

**Note:** Rotating the trunk often leads to a minimal veer in the direction in which the traveler's trunk faces. This skill is used by travelers who wish to purposely veer

slightly into an opening in order to avoid an unintended veer into a parallel hallway or other open space. While this is less efficient than traveling directly across the opening, it may be best for travelers who have poor orientation or distance estimation or who have difficulty maintaining a straight line of travel.

1. Upon locating the opening with his trailing hand, the traveler maintains contact with the wall and walks up to the opening. He pauses and listens to verify that no one is passing through the opening (see Figure 5.04a).

**Figure 5.04a**
Upon locating the opening, the traveler pauses and listens to verify that no one is passing through the opening. When it is clear, he assumes the UPPER HAND & FOREARM position.

2. When it is clear, the traveler projects a straight line of travel across the opening; he drops his trailing arm to his side, assumes the UPPER HAND & FOREARM position, and rotates his trunk (not his entire body) toward the opening (see Figure 5.04b).
   - Rotating his trunk ensures that the traveler will veer only slightly, and not excessively, into the opening, thereby minimizing the chances of veering into the parallel hallway. It is important to rotate just the trunk, because rotating the entire body can sometimes cause an excessive veer into the opening.


**Figure 5.04b**
The traveler rotates his trunk (not his entire body) toward the opening to ensure a slight veer into the opening and to minimize the chances of veering into the parallel hallway.

3. The traveler crosses the opening using the UPPER HAND & FOREARM technique.
    - The UPPER HAND & FOREARM position protects his body from contact with the wall on the opposite side of the opening.
    - He may choose to simultaneously use the LOWER HAND & FOREARM technique if there is any possibility of encountering objects at or slightly below waist level as he crosses the opening.
    - If the traveler walks a sufficient distance and does not locate the wall on the other side of the opening, he can relocate it using the Recovery from a Veer skill.

4. Upon locating the perpendicular wall on the other side of the opening, the traveler turns toward the desired direction of travel and trails the wall to the corner.
5. The traveler pauses and listens for intersecting pedestrian traffic. When it is clear, he turns the corner and resumes travel.

## Squaring-Off

This skill is used generally when crossing wider openings (e.g., an intersecting hallway). While this is less efficient than traveling directly across the opening, it provides added assurance that the traveler will not miss the wall or other vertical surface on the far side. It may, therefore, be especially useful for travelers who have poor orientation or distance estimation or who have difficulty maintaining a straight line of travel.

1. Upon locating the opening with his trailing hand, the traveler maintains contact with the wall and walks up to the opening. He pauses and listens to verify no one is passing through the opening.
2. When it is clear, the traveler turns the corner and takes one step. This is often called "indenting."

3. Using the DIRECTION-TAKING technique, the traveler "squares off" from the wall by placing his back against it (see Figure 5.05).

**Figure 5.05**
The traveler "squares off" against the wall to assist in projecting a straight line of travel across the opening and to minimize any chance of veering into the parallel hallway.

4. After listening to verify it is still clear, the traveler projects a straight line of travel across the opening. He then walks across the opening to the opposite side using the UPPER HAND & FOREARM technique (see Figure 5.06).
    - The UPPER HAND & FOREARM technique protects his body from contact with the wall on the opposite side of the opening.
    - He may choose to use the LOWER HAND & FOREARM technique, as well, if there is any possibility of encountering objects at or slightly below waist level as he crosses the opening.
    - If the traveler walks a sufficient distance and does not locate the wall on the other side of the opening, he can relocate it using the Recovery from a Veer skill.

**Figure 5.06**
The traveler projects a straight line of travel and walks across the opening using the UPPER HAND & FOREARM technique.

5. Upon locating the wall on the other side of the opening, the traveler turns toward the desired direction of travel and trails the wall to the corner.
6. The traveler pauses and listens for intersecting pedestrian traffic. When it is clear, he turns the corner and resumes travel.

## Passing Crowded Doorways

To pass a crowded doorway or other opening without contacting people who are standing in the opening

1. Upon encountering a crowded doorway, the traveler pauses and listens for people passing through the opening or standing in his projected travel path around the doorway.
2. When it is clear, the traveler assumes the UPPER HAND & FOREARM position with his arm that is opposite the wall; he assumes the LOWER HAND & FOREARM position with his arm closest to wall. He moves in a semicircle across the estimated width of the doorway and locates the wall on the opposite side. He then resumes travel (see Figure 5.07).
    - Using both the UPPER HAND & FOREARM technique and the LOWER HAND & FOREARM technique provides the traveler with maximum body protection if an object or person is contacted.
    - If the traveler walks a sufficient distance and does not locate the wall on the other side of the doorway, he can relocate it using the Recovery from a Veer skill.

**Figure 5.07**
The traveler moves in a semi-circle across the estimated width of the doorway.

# Common Errors and Corrections

## Error:

The traveler fails to pause at the opening before crossing it.

## Correction:

Pausing at the opening before crossing gives the traveler time to listen for people who may be passing through the opening (and gives other people time to notice him) before he begins to cross. Waiting until it is clear before crossing will, therefore, prevent the traveler from bumping into other people.

## Error:

The traveler rotates his trunk away from the intersecting hallway, when crossing an opening using the Rotating Trunk skill.

## Correction:

When using the Rotating Trunk skill to cross an opening, the traveler should rotate his trunk toward the opening to help ensure that he will veer slightly into it and, thereby, minimize his chances of veering into the parallel hallway.

## Error:

The traveler rotates his entire body from head to toe toward the opening to cross it when using the Rotating Trunk skill.

## Correction:

Rotating only his trunk will help ensure that the traveler veers only slightly into the opening while still maintaining his general direction of travel. Rotating his entire body can cause the traveler to veer too far into the opening.

## Error:

The traveler fails to use the UPPER HAND & FOREARM technique when crossing a large open space using the Squaring-Off skill.

## Correction:

Using the UPPER HAND & FOREARM technique and/or the LOWER HAND & FOREARM technique (depending upon the environment) when crossing a large open space protects the traveler's body against injury from bumping into the wall (or objects along it) on the other side of the opening.

# Notes for Teachers

Although described in terms of crossing a hallway and locating a wall on the other side, this technique can also be used to cross many types of openings, including those where the vertical surface on the other side can only be located using a cane (e.g., a grass line on the far side of a street or driveway when the traveler is walking in areas without sidewalks).

# Related Techniques

Areas Without Sidewalks
Gas Stations[1]

[1] When recovering from an inadvertent veer into a gas station, the traveler can use the TRAVERSING OPEN SPACES technique (Squaring-Off skill) to cross the open area of the gas station and return to the public sidewalk.

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